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7 BEFORE THE STATE OF WASHINGTON
8 ENERGY FACILITY SITE EVALUATION COUNCIL
9

10 IN RE APPLICATION NO. 99-1

EXHIBIT _____(MC-RT)

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13 SUMAS ENERGY 2 GENERATION
14 FACILITY
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20 **APPLICANT'S PREFILED REBUTTAL TESTIMONY**

21
22 **WITNESS : MARGARET CURTIS**
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27 **Q. Please introduce yourself to the Council.**

28
29 A. My name is Margaret Curtis. I am a professional engineer licensed in the State of
30 Washington, and am majority owner and managing member of Wilson Engineering, L.L.C.,
31 Bellingham, WA.
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37 My area of expertise is environmental engineering, which means that among other things I
38 design and provide consulting services for municipal utilities such as water, sewage, and
39 stormwater management facilities. I have twenty years of engineering experience related to
40 analysis, planning, design, and construction management of municipal utility infrastructure.
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EXHIBIT ____ (MC-RT) –
MARGARET CURTIS
REBUTTAL TESTIMONY - 1

[31742-0001/Margaret Curtis Rebuttal.doc]

PERKINS COIE LLP
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Seattle, Washington 98101-3099
(206) 583-8888

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2 Before moving to Bellingham in 1991, I worked as a licensed professional engineer in
3
4 Houston, Texas. A copy of my resume has previously been provided as Exhibit ____ (MC-1).
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8 **Q. Describe your involvement with the SE2 project.**
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10 A. Our firm has been engaged by both the City of Sumas and SE2 to consult primarily on
11
12 wastewater and stormwater issues related to this development. As an adjunct to the
13
14 stormwater design, we have also assisted SE2 and John Wong with wetland impact
15
16 mitigation plans. I have been our firm's project manager for most of the work in
17
18 Sumas since approximately 1995.
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22 **Q. Which testimony are you responding to with this rebuttal?**
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24 A. I have been asked to respond to testimony concerning stormwater practices, SE2's
25
26 proposed stormwater detention pond, and water quality issues, including portions of
27
28 the testimony of Steven Hood and Curt Leigh.
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32 **Q. Mr. Hood testifies that "There are two main deficiencies of Sumas 2's proposed**
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34 **stormwater detention system: (1) the impacts of flooding on the stormwater**
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36 **system and how the impacts would be mitigated are not clearly identified; and**
37
38 **(2) as currently designed, the stormwater system would excessively impact**
39
40 **downstream landowners through increased streambank erosion and increased**
41
42 **flooding." Do you agree with Mr. Hood's testimony as to detention system**
43
44 **deficiencies?**
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2 A. No. I will address his second noted deficiency first. Throughout his testimony, Mr.
3
4 Hood has raised several appropriate questions, which would typically be addressed at
5
6 the final design stage of a project. Our firm has to date provided SE2 and EFSEC
7
8 with a conceptual drainage design, which will be fine-tuned during final design to meet
9
10 site drainage and environmental requirements. Because our design calculations for the
11
12 conceptual work were not furnished as part of the EFSEC application process, Mr.
13
14 Hood has one major misunderstanding about the design, which I hope to resolve with
15
16 this rebuttal testimony. The ability of the proposed detention pond system to detain
17
18 larger than the 10 year storm was unfortunately not clearly presented by our drawing
19
20 entitled "Preliminary Site Grading and Drainage Plan". On this drawing, we included a
21
22 note that said: "The 100 year event will not be detained since the entire site will be
23
24 surrounded by water and is in the 100 year flood plain." This note requires further
25
26 explanation regarding pond capability and the offsite flooding of the surrounding area.
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30 Envision an isolated, 100-year frequency 24 hour storm event falling only on the SE2
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32 project site. The SE2 detention pond system will be capable of detaining and releasing
33
34 that 100 year intensity runoff using a Full Control Orifice structure such as that
35
36 described by Mr. Hood. The conceptual detention volume of Cell 2 between
37
38 elevations 38.9 (the permanent pool elevation) and elevation 40.5 is approximately
39
40 1.64 acre feet. That volume is sufficient to detain the developed 100 year storm runoff
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42 from the SE2 site, and release it at pre-developed runoff rates. Therefore our
43
44 conceptual design *has* provided detention for the 100 year event falling on the SE2
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46 property.
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4 Now envision that there is an area-wide 100 year flood event. The Sumas area will
5 receive direct rainfall at 100 year intensity, and will receive flood waters from other
6 locales, creating a 100 year flood water surface of Elevation 44. The detention pond
7 berms are presently proposed at Elevation 41.5. Above this elevation, the
8 surrounding 100 year flood from other sources will gradually inundate the ponds.
9 From the point at which the 100 year notch on the Full Control Structure becomes
10 submerged by outside flood water, mitigation of downstream streambank erosion
11 impacts from SE2's development becomes moot until the floodwaters recede. When
12 flood water drops below the 100 year notch, the Full Control Structure would again
13 limit release rates to pre-developed rates for the 100, 10 and 2 year 24 hour storms.
14 Our drawing note stated that the 100 year storm would not be detained. That
15 unfortunately underrepresented the pond's capabilities, since the pond *will* detain the
16 100-year storm from the SE2 site to the point in time at which it can no longer cause a
17 downstream streambank erosion impact.
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34 Summarizing again, the conceptual detention volume portion of Cell No. 2 of the
35 detention pond is 1.64 acre feet. This pond volume coupled with an appropriately
36 designed outlet control structure, will detain and release runoff from the developed
37 SE2 site at the following required rates: (1) match ½ of the pre-developed condition 2
38 year 24 hour storm runoff rate, (2) match the pre-developed 10 year 24 hour storm
39 runoff rate, and (3) match the pre-developed 100 year 24 hour storm runoff rate. Our
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2 final design calculations using WaterWorks hydraulic software will be supplied to
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4 reviewing agencies with the final designs.
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8 **Q. Returning now to the first main deficiency identified by Mr. Hood, he testifies**
9 **that SE2's proposed stormwater detention system does not clearly identify "the**
10 **impacts of flooding on the stormwater system and how the impacts would be**
11 **mitigated." Would you please identify any such impacts and mitigation**
12 **measures?**
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18 A. Mr. Hood correctly recognizes that during an area-wide 100 year flood event, the
19 entire area around the site will be flooded, and some catch basin rims and the
20 detention/treatment ponds will be submerged. As the flood level recedes, and
21 downstream ditches and streams empty, the onsite storm drains and
22 detention/treatment ponds will begin functioning as designed. I see two possible,
23 though insignificant, impacts of offsite flooding on the SE2 stormwater system.
24 Settled contaminants in Cell 1, if any, might become re-suspended in offsite
25 floodwaters which overtop the detention pond berms. Mitigation for this possibility
26 might include preventive sampling and cleaning of the Cell 1 bottom prior to the
27 winter rainy season. A second possible impact of offsite floodwaters on the SE2
28 stormwater system might be sediment deposition from offsite sources in the SE2
29 stormwater detention ponds. If such an impact was even discernible, the mitigation
30 could be a post-event removal of sediment build-up. Both of these potential impacts
31 would be insignificant and very rare in frequency.
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2 **Q. Specifically, Mr. Hood testifies that “ Several catch basin rim elevations in the**
3 **storm are below the stated flood elevation. Therefore, during flooding the**
4 **stormwater system will not be functional as designed. Stormwater leaving the**
5 **site may bypass treatment systems, resulting in discharge of water that does not**
6 **meet state water quality standards.” What is your response to these points?**
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11 **A.** During a 100-year area-wide flood, the onsite stormwater system will retain water
12 because the ditch outlet will be submerged. The conceptual drainage design
13 recognizes this fact and allows the ponds and storm drain system to be submerged
14 during the 100-year FEMA flood event. SE2 plant equipment must be constructed
15 above the 100-year flood elevation, and the equipment is not dependent upon a
16 functioning onsite drainage system for protection from flooding. I disagree that
17 stormwater leaving the site during flooding “does not meet state water quality
18 standards.” The Stormwater Management Manual for the Puget Sound only requires
19 water quality treatment for the 6-month 24 hour storm. This is logical because runoff
20 from short, frequently occurring storms, typically washes off the highest level of
21 surface contaminants. Runoff from larger, more intense, less frequent events is
22 cleaner.
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38 **Q. Mr. Hood recommends that SE2's Stormwater Pollution Prevention Plan**
39 **"should identify to what extent the stormwater system will be flood proofed and**
40 **under what conditions the stormwater treatment will no longer function." Do**
41 **you agree with this recommendation?**
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2 A. I do not envision that the stormwater system will need to be flood proofed. The
3
4 stormwater treatment will function until the entire offsite area is flooded by the Sumas
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6 River. Stormwater Pollution Prevention Plans (for both construction and operations
7
8 phases) will be developed during the detailed design phase, and will address pre- and
9
10 post-flood activities. The treatment system is intended to treat all runoff from the site
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12 for the 6 month 24 hour storm and smaller as required by the Storm Water
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14 Management Manual for Puget Sound.
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18 **Q. Mr. Hood further recommends that "additional source control measures should**
19
20 **be deployed that will eliminate the need for treatment during those instances**
21
22 **when conditions that are likely to lead to failure of the stormwater treatment**
23
24 **system exist." Do you agree with this recommendation?**

25
26 A. Yes, if I understood what Hr. Hood is suggesting. Source control Best Management
27
28 Practices ("BMP's") are an important component of pollution prevention. They will
29
30 be selected and identified during detailed design of the plant site, and will be included
31
32 in the Stormwater Pollution Prevention plans.
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35
36 **Q. Mr. Hood's testimony states "as currently designed, the stormwater system**
37
38 **would excessively impact downstream landowners through increased stream**
39
40 **bank erosion and increased flooding." Do you agree with this statement?**

41
42 A. No, but I understand why Mr. Hood thought it might be a problem. As described
43
44 earlier in my testimony, the detention system *will* limit runoff release rates to ½ of the
45
46 pre-developed 2 year 24 hour rate, and will match the pre-developed 10 year 24 hour
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1 and 100 year 24 hour rates. The developed site will have lower than existing runoff
2 rates for storms up to the pre-developed 2 year condition, and have identical runoff
3 rates for the pre-developed 10 year and 100 year conditions as required by the Storm
4 Water Management Manual for Puget Sound. There will be less or no stream bank
5 erosion impact on downstream landowners. There will also be less or no flooding
6 impact on downstream landowners related to increased imperviousness at the SE2 site.
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15 **Q. Mr. Hood recommends three options to mitigate impacts on downstream**
16 **landowners. Please comment on his recommendations.**
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18 **A.** As I explained above, the stormwater detention system will have less or no flooding
19 impact on downstream landowners. In any event, our conceptual design *does* comply
20 with his request that we match pre-and post-developed peak flow rates for the 100
21 year storm. Our conceptual designs also comply with the Ecology Stormwater
22 Manual to the extent of detail that they provide. The final designs will similarly
23 comply. The pond system will be functional for a localized 100-year event, and will
24 quickly regain its function if inundated by an area-wide 100-year event.
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35 **Q. In his testimony, Mr. Hood indicates that "several issues [] need to be**
36 **addressed" with respect to water quality. He describes those issues as:**
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38 (1) a complete Stormwater Pollution Prevention Plan as outlined in the
39 requirements of the NPDES General Construction Stormwater Permit should be
40 prepared and submitted to Ecology for its review and approval; and
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2 (2) a complete Stormwater Pollution Prevention Plan as outlined in the
3 requirements of the NPDES General Industrial Stormwater Permit should be
4 prepared and submitted to Ecology for its review and approval; and
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7 (3) detention for event greater than a 10 year would also have to be
8 addressed.
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11 Do you agree with his assessment?
12

13 A. No. Responding to concern (3) first, I have earlier described in this testimony that the
14 drainage design does prevent streambank erosion and flooding impacts from SE2 site
15 development for site runoff from the 2 year, 10 year and 100 year events. Regarding
16 the Stormwater Pollution Prevention Plans for both construction and operating phases,
17 SE2's EFSEC application recognized the importance and requirement for these plans
18 and also stated that they would be prepared based upon final designs. They must be
19 meaningful, accurate, and specific to the final facilities, timelines and persons
20 responsible for accomplishing and monitoring outcomes (i.e. particular site
21 contractors, particular SE2 employment positions, etc.) or they will not be effective.
22 Those plans will be prepared in accordance with Department of Ecology NPDES
23 requirements, but it is only reasonable to do so after EFSEC has certified the site and
24 final designs have been prepared.
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40 Q. Mr. Hood's testimony sets forth three water quality enforcement mechanisms
41 that he recommends. Are these appropriate recommendations?
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43 A. The Stormwater Pollution Prevention Plans for construction and operations phases are
44 completely appropriate and necessary, and should be submitted to EFSEC for review
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1 and approval during final design stage. However, Mr. Hood's suggested requirement
2 for upstream and downstream monitoring and automatic stipulated penalties impress
3 me as significantly more demanding and punitive in nature than what I typically see
4 applied to other major construction projects. I don't believe the project warrants the
5 sort of heavy-handed approach that would be used if there had already been multiple
6 previous violations.
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15 **Q. In summary, Mr. Hood recommends that two "measures must be taken to**
16 **ensure that the construction and operation of the proposed facility will not**
17 **violate state water quality standards":**
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21 **1) Flood proof the stormwater treatment system to the extent practicable**
22 **and provide additional source control measures for conditions where it is likely**
23 **to fail.**
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27 **2) Provide additional stormwater detention to protect downstream**
28 **landowners from excessive stormwater discharges during events greater than the**
29 **10 year 24 hour storm.**
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33 **Do you agree with his recommendation?**
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35 **A.** I do not agree that the stormwater management system needs to be structurally
36 floodproofed. However, I do think it reasonable to remove any accumulated
37 sediments from the floor of Cell 1 annually in October, prior to the commencement of
38 November rains. I also think it reasonable to plan for an inspection and possible clean-
39 up of the stormwater system after each event greater than a 50 year storm. The
40 inspection and clean-up steps would be specifically detailed in the Stormwater
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2 Pollution Prevention Plan addressing permanent operations. I think these measures
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4 would address Mr. Hood's water quality concerns.
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8 I do agree with his second suggested measure, and that has already been provided by
9
10 our conceptual pond design.
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12
13 **Q. Mr. Leigh's testimony questions "the effect of the redesigned stormwater**
14 **detention pond on the water quality of the discharge pond." Can you respond to**
15 **his question?**
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19 **A.** The shapes of Cells 1 and 2 of the treatment/detention pond system were changed to
20
21 provide more shallow, intermittently saturated shoreline, and to look and function
22
23 more like natural ponds in terms of vegetative substrate and habitat for
24
25 microorganisms, fish, amphibians and water fowl. The volumes required for treatment
26
27 below the permanent pool elevations in Cell 1 and Cell 2 are still in accordance with
28
29 the Department of Ecology Stormwater Manual. Therefore the water quality of pond
30
31 effluent from Cell 2 will be even better with the re-designed ponds due to additional
32
33 contact with wetlands type vegetation and associated microbiological colonies.
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36
37 **Q. Mr. Leigh's testimony also questions "the ability of the structure to retain water**
38 **for permanent open water habitat for wildlife." Can you respond to this**
39 **question?**
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43 **A.** These are details that would typically be provided at the final design stage. However,
44
45 I and other consultants for SE2 met with Mr. Leigh on July 6th and discussed with him
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1 the physical means by which water elevations are to be controlled in the
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3 treatment/detention ponds, and with respect to additional wetlands impact mitigation
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5 areas. I believe he is now more assured of the final design's ability to achieve
6
7 permanent open water habitat for wildlife. The Full Control Structure type of orifice
8
9 detailed by Mr. Hood will be used to control water elevations at the outlet end of each
10
11 cell. Cell 1 is planned as a four foot deep pool, and Cell 2 is planned as a permanent
12
13 1.9 foot deep pool, below the level reserved for detention of runoff. If there is no rain
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15 for a period of time, the depth and water surface area of each cell may decrease due to
16
17 evaporation. A similar condition would exist for any natural pond exposed to the
18
19 same weather conditions.
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24 **END OF REBUTTAL TESTIMONY**
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26 I declare under penalty of perjury that the foregoing testimony is true and correct to
27
28 the best of my knowledge.
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32 _____
33 Margaret Curtis
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